

LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA24 | Birmingham Interchange and Chelmsley Wood

Data appendix (AG-001-024)

Agriculture, forestry and soils

November 2013

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1 Introduction

- 1.1.1 The agriculture, forestry and soils appendices for the Birmingham Interchange and Chelmsley Wood community forum area (CFA24) comprise:
- soils and agricultural land classification surveys (Section 2);
 - forestry (Section 3); and
 - farm impact assessment summaries (Section 4).
- 1.1.2 Maps referred to throughout the agriculture, forestry and soils appendix are contained in the Volume 5: agriculture, forestry and soils map book.

2 Soils and agricultural land classification surveys

2.1 Background

- 2.1.1 The soils and agricultural baseline conditions reported have been established from desktop studies and site surveys.
- 2.1.2 Information gathered by desktop studies has related primarily to the identification of soil resources in the study area, the associated physical characteristics of geology, topography and climate which underpin the assessment of agricultural land quality, and the disposition of land uses. The main sources of information have included:
- National Soil Map;¹
 - Soils and Their Use in Midland and Western England;²
 - solid and superficial deposits from the Geology of Britain viewer;³
 - gridpoint meteorological data for Agricultural Land Classification of England and Wales;⁴
 - provisional Agricultural Land Classification of England and Wales (1:250,000);⁵
 - Likelihood of Best and Most Versatile Agricultural Land (1:250,000);⁶
 - agri-environment schemes;⁷
 - aerial photography; and
 - on-site soil and Agricultural Land Classification surveys.
- 2.1.3 Information gathered by field survey has related to the enhancement of desk-based information on soils and agricultural land quality, and the engagement with landowners and tenants to establish the nature and extent of agricultural, forestry and related rural enterprises.
- 2.1.4 Where the collection of agricultural site information has enabled a review/refinement of published information, this was undertaken in accordance the methodology prescribed by Ministry of Agriculture, Fisheries and Food (MAFF)⁸.

¹ Cranfield University, (2001), *The National Soil Map of England and Wales 1:250,000 scale*. Cranfield University: National Soil Resources Institute.

² Soil Survey of England and Wales, (1984), *Soils and Their Use in Midland and Western England*. Harpenden.

³ British Geological Survey, (2013); *Geology of Britain*; <http://bgs.ac.uk/discoveringGeology/geologyOfBritain/home.html?src=topNav>; Accessed: June 2013

⁴ Meteorological Office, (1989), *Gridpoint Meteorological data for Agricultural Land Classification of England and Wales and other Climatological Investigations*.

⁵ Ministry of Agriculture, Fisheries and Food, (1983), *Agricultural Land Classification of England and Wales (1:250,000)*.

⁶ Department for Environment, Food and Rural Affairs, (2005), *Likelihood of Best and Most Versatile Agricultural Land (1:250,000)*.

⁷ Multi-Agency Geographical Information for the Countryside (MAGIC); www.magic.gov.uk; Accessed: June 2013.

- 2.1.5 Information obtained from farm impact assessment interview surveys has been taken as a factual representation of local agricultural and forestry interests and has not been subject to further evaluation.

2.2 Soils and land resources

- 2.2.1 This part of the appendix describes the findings of a desktop study of available soil survey and Agricultural Land Classification (ALC) data that identified existing soil and agricultural land resources in the study area. Detailed survey data is available for three areas within the study area:

- Brickfield Farm, Chelmsley Wood – MAFF data 1996⁹;
- Park Farm, Packington – Chamley Associates 2011¹⁰; and
- Packington land fill site – Reading Agricultural Consultants 1996¹¹.

- 2.2.2 The location and extent of different soil types and agricultural land in the different ALC grades are influenced by topography and drainage, and by geology and soil parent materials, which are described in turn in the following sections. This section then provides a description and distribution of the main soil types encountered along the study corridor.

Topography and drainage

- 2.2.3 The main topographical feature within the study area is the floodplain of the River Blythe and related minor tributaries, notably Hollywell Brook, which are associated with land generally below 80m above Ordnance Datum (AOD).
- 2.2.4 The remainder of the study area comprises gently sloping land, with slightly higher ground to the west of the River Blythe with the highest points in the vicinity of Diddington Hill and the A45 Coventry Road in the south and the A452 Chester Road crossing of the M42 at around 100m AOD. Between these runs the shallow valley of the Hollywell Brook. Lower land in the north of the study area is associated with the River Cole.

8 Ministry of Agriculture, Fisheries and Food, (1988), *Agricultural Land Classification of England and Wales – Revised guidelines and criteria for grading the quality of agricultural land*.

9 Natural England, (1996), *Survey ref: 048/96. Brickfield Farm, Nr Solihull. Major Investment Site Proposal. Agricultural land Classification Survey. ALC Map and Report*.

10 Chamley Associates, (2011), *Packington Estate Enterprise Ltd. Park Farm. Soil and Agricultural Land Classification Survey*.

11 Reading Agricultural Consultants, (1996), *Survey of land at Little Packington. Proposed northern and southern extensions to existing landfill*.

Geology and soil parent materials

- 2.2.5 The predominant underlying geology mapped by the British Geological Survey (BGS) is Triassic mudstones (Mercia Mudstone Group). To the north of the Hollywell Brook and on small areas straddling the A45 Coventry Road, these are overlain by superficial deposits of glacial sands and gravels. In the Chelmsley Wood area there is also an area of glaciolacustrine deposits (silt and clays). The floodplain of the Hollywell Brook and River Blythe has associated alluvial deposits.
- 2.2.6 A list of geological strata occurring within the study area is provided in age order in Table 1 and detailed in Map WR-02-024 (Volume 5, Map Book Water resources)

Table 1: Bedrock and soil forming materials

Formation	Composition/soil parent material
Bedrock	
Mercia Mudstone Group	Red mudstones and layers of dolomitic siltstones.
Superficial deposits	
Alluvium	Compressible silty clay (silt, sand and gravel)
Glaciolacustrine deposits	Laminated silt and clay; local interbedded peat
Glaciofluvial deposits	Sand and gravel

Description and distribution of soil types

- 2.2.7 The characteristics of the soils are described by the Soil Survey of England and Wales Bulletin¹² that accompanies the National Soil Map¹³. The soils are grouped into soil associations of a range of soil types (soil series) showing similar characteristics.
- 2.2.8 The National Soil Map shows the following four soil associations in the study area:
- across most of the area, the Soil Survey of England and Wales maps the Arrow association which is typically coarse sandy loam soils. These are of variable permeability and occasionally seasonally waterlogged. They are most commonly assessed as being of wetness class (WC) II -III¹⁴. The extent of these soils is largely determined by the occurrence of superficial fluvio-glacial sands and gravels;
 - at the southern end of the study area in the vicinity of the A45 Coventry Road is part of an extensive occurrence of Brockhurst I association soils. These are heavier textured, clay loam soils over slowly permeable clay subsoils. This reflects their association with the underlying mudstone parent materials. These soils are generally attributed to WC III-IV;

¹² Soil Survey of England and Wales, (1984), *Soils and Their Use in Midland and Western England*. Harpenden.

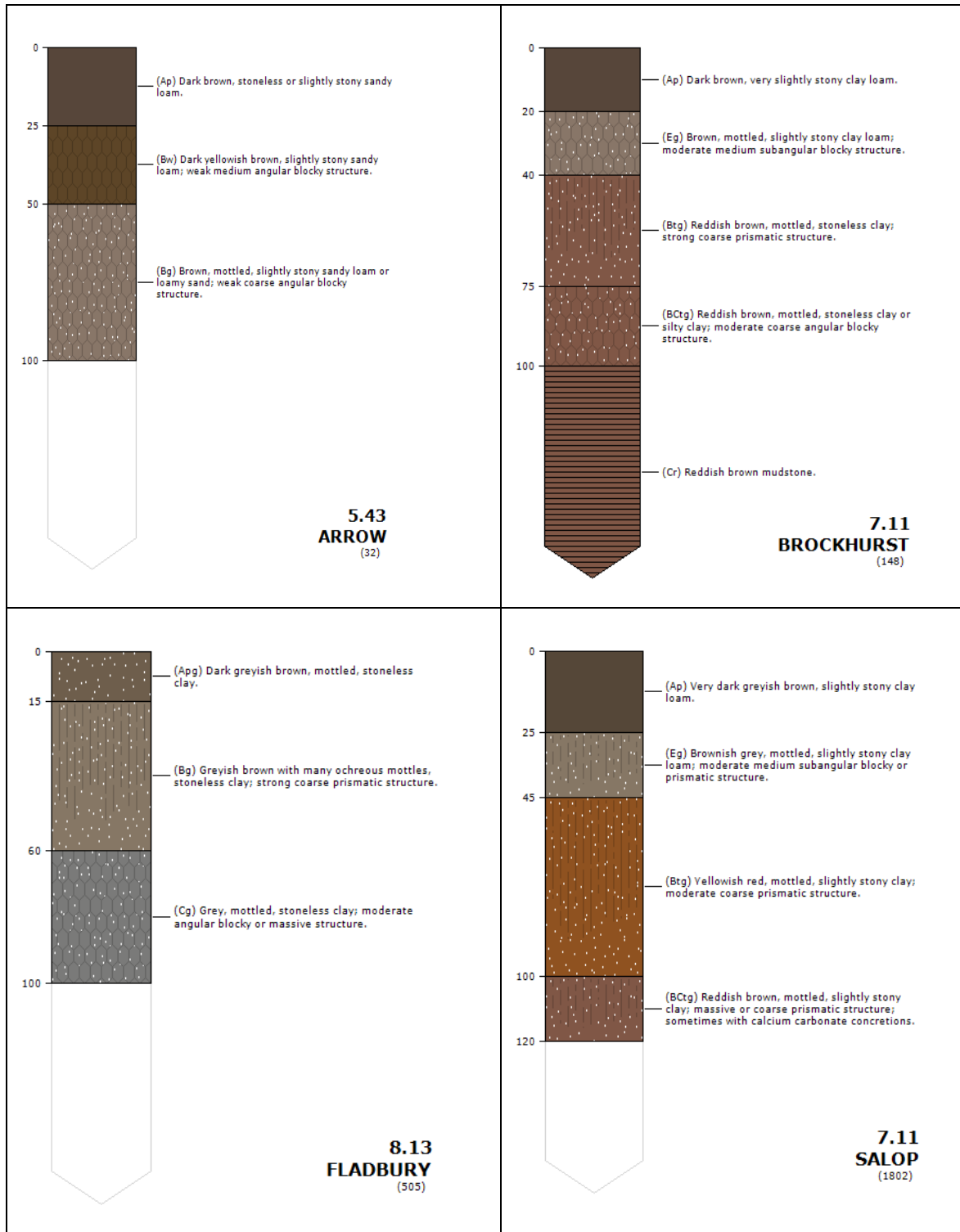
¹³ Cranfield University, (2001), *The National Soil Map of England and Wales 1:250,000 scale*. Cranfield University: National Soil Resources Institute.

¹⁴ The Wetness Class (WC) of a soil is classified according to the depth and duration of waterlogging in the soil profile and has six bands

- at the northern end of the study area near Chelmsley Wood is a small area of Salop association soils which is associated with a discrete presence of an area of glaciolacustrine clays and silts. Salop soils comprise clay loam and clay topsoils with slowly permeable subsoils, and fall within WC III-IV; and
- the Fladbury 1 association soils associated with the floodplain of the River Blythe and Hollywell Brook are slowly permeable medium or heavy clay loam topsoils over clay subsoils derived from alluvial deposits. They are subject to groundwater waterlogging associated with fluctuating river levels and perennial flooding, and fall within WC IV.

2.2.9 Typical profiles for the soil types present are depicted in Figure 1.

Figure 1: Predominant soil profile descriptions



2.3 Soil and land use interactions

Agricultural land quality

- 2.3.1 There is detailed post-1988 ALC data available within the study area. This has formed the basis for an intensive desk based assessment of the remaining areas which has relied on the interpretation of soil mapping, topography and agro-climatic data, and the interactions between each factor. This resulted in a comprehensive assessment of the likely soil textures, soil drainage status, landform, gradient, presence of or depth to poorly permeable soil layers and the extent to which crop growth may be limited by soil droughtiness.
- 2.3.2 Outside the areas for which detailed survey data is available, a professional judgement has been made of predominant ALC grade which is likely for a soil with the given characteristics found, in the agro-climatic zone of the location within the area. Professional judgement is influenced by the surveyor's experience of previous surveys in the locality and on similar soil types. The resulting grade is that which is considered to be the most likely grade that would be found should a detailed site investigation be conducted, although this does not mean in all cases that grade will be found in practice.
- 2.3.3 The land quality context is initially derived from the provisional ALC maps of England and Wales, produced by MAFF in the 1960s and 1970s. These maps show the study area to be provisionally mapped as predominantly Grade 3, good to moderate quality land, with Grade 4, poor quality land, on the floodplain areas of the River Blythe and Hollywell Brook.
- 2.3.4 These maps were originally published at a scale of 1:63,360 and are available at a scale of 1:250,000 in paper and digital formats. The main limitations of these provisional maps are that they are published on strategic scales only and according to a methodology which has since been revised twice. Therefore they cannot be used to definitively classify individual sites and hence further data analysis was conducted.
- 2.3.5 The principal physical factors influencing agricultural production and land quality are climate, site and soil, and the interactions between them.

Agro-climatic limitations

- 2.3.6 The climate in this part of England does not in itself place any limitation upon land quality, but the interactions of climate with soil characteristics are important in determining the wetness and droughtiness limitations of the land. The influence of climate on soil wetness is assessed by reference to median field capacity days, when the soil moisture deficit is zero, soil WC and topsoil texture. Droughtiness is determined by comparing the available water capacity of the soil, adjusted for the crop, with the moisture deficit for the locality for two crops, winter wheat and potatoes.

- 2.3.7 The local agro-climatic factors have been interpolated from the Meteorological Office's standard 5km grid point dataset at two points within the study area, as set out in Table 2. There is no variation across the study area. Average annual rainfall is 682mm. Median field capacity days are 159 days. Moisture deficits are 99mm for wheat and 88mm for potatoes.

Table 2: Interpolated agro-climatic data

Agro-climatic parameter	Park Farm	Chelmsley Wood
Altitude (mAOD)	95 m	100 m
Average annual rainfall (AAR)	682 mm	682 mm
Accumulated temperature more than 0°C (ATo) ¹⁵	1372 day	1372 day
Field capacity days (FCD)	159 days	159 days
Average moisture deficit, wheat (MDM WHT)	99 mm	98 mm
Average moisture deficit, potatoes (MDM POT)	88 mm	88 mm

Site limitations

- 2.3.8 The assessment of site limitations is primarily concerned with the way in which topography influences the use of agricultural machinery and hence the cropping potential of land. Gradient and micro relief¹⁶, with complex changes of slope angle or direction over short distances, are not considered limiting. Flooding in the study area is limited to the floodplains of the River Blythe and its tributaries. This is a potential limitation but its precise incidence is difficult to ascertain. Flood risk is determined by the extent, duration, frequency and timing of flooding events. The published flood maps by the Environment Agency can be used as a guide (see Map WR-05-154 and 154-L1 (Volume 5 Map Book Water resources) and regard had to the physical condition of the land. It is judged that the quality of the land in these areas is compromised by soil wetness considerations.

Soil limitations

- 2.3.9 The main soil properties which affect the cropping potential and management requirements of land are texture, structure, depth, stoniness and chemical fertility. Together they influence the functions of soil and affect the water availability for crops, drainage, workability and trafficability. The main soil characteristics within the study area are:

- light loamy and sandy textures in the soils associated with fluvioglacial and lacustrine

¹⁵ Accumulated temperature is the excess of daily air temperatures above a selected threshold temperature (0°C), summed over a specified period (January to June which is the critical growth period for most crops).

¹⁶ Complex changes of slope angle and direction over short distances or the presence of boulders or rock outcrops, even on level or gentle slopes, which can severely limit the use of agricultural machinery.

deposits;

- loamy over clayey textures, commonly with poor subsoil structure and slow permeability, over Mercia Mudstone; and
- clayey textures in the alluvial soils of the floodplain.

2.3.10 Soil depth and chemical limitations are not encountered.

Interactive limitations

2.3.11 The physical limitations which result from interactions between climate, the site and soil are soil wetness, droughtiness and erosion. Each soil can be allocated a WC based on soil structure, evidence of waterlogging and the number of FCD; the topsoil texture then determines its ALC Grade in accordance with Table 6 of the MAFF ALC guidelines (as detailed in Figure 2).

2.3.12 Deep light loamy and sandy soils of the Arrow association are permeable and largely well drained (WC I) or have slight seasonal waterlogging (WC II), and in both cases are without a wetness limitation. Seasonally waterlogged soils (WC III) of the Brockhurst 1 and Salop associations will be limited to Subgrade 3a where the topsoil is medium clay loam, but Subgrade 3b where heavy clay loam. In wetter situations (WC IV) associated with the floodplain of the River Blythe and Hollywell Brook, the clayey textures of the Fladbury 1 association will limit the land to Subgrade 3b.

2.3.13 Soil texture and structure determine the available water capacity of the soil profile. When calculated against the demands of a growing wheat and potato crop in the locality given by the climatic variable, the moisture deficit, a moisture balance is produced from which a droughtiness limitation can be assessed using the method set out in the MAFF ALC guidelines (as detailed in Figure 3). The medium loam over clay soils of the Brockhurst 1 and Salop associations have sufficient moisture reserves in an average year to have no droughtiness limitation, or only one that limits the land to Grade 2. The light textured soils of the Arrow association, however, tend to have a smaller available water capacity. Dominantly light loamy soils limit the land to Grade 2 or Subgrade 3a depending on the stone content, and sandy soils are Subgrade 3a or 3b, again depending on the stone content.

2.3.14 Grade 2 land occurs on the loamy soils of the Salop association where it is associated with the glaciolacustrine deposit and there is evidence of some drainage impedance in the subsoil.

2.3.15 Within the seasonally waterlogged soils of the Fladbury 1 association, where the wetness/texture limitation is more restrictive and the safe working period shorter, the land has been assessed as Subgrade 3b.

Figure 2: ALC grade according to soil wetness¹⁷

Wetness Class	Texture ¹ of the top 25 cm	Field Capacity Days				
		<126	126-150	151-175	176-225	>225
I	S ² LS ³ SL SZL	1	1	1	1	2
	ZL MZCL MCL SCL	1	1	1	2	3a
	HZCL HCL	2	2	2	3a	3b
	SC ZC C	3a(2)	3a(2)	3a	3b	3b
II	S ² LS ³ SL SZL	1	1	1	2	3a
	ZL MZCL MCL SCL	2	2	2	3a	3b
	HZCL HCL	3a(2)	3a(2)	3a	3a	3b
	SC ZC C	3a(2)	3b(3a)	3b	3b	3b
III	S ² LS SL SZL	2	2	2	3a	3b
	ZL MZCL MCL SCL	3a(2)	3a(2)	3a	3a	3b
	HZCL HCL	3b(3a)	3b(3a)	3b	3b	4
	SC ZC C	3b(3a)	3b(3a)	3b	4	4
IV	S ² LS SL SZL	3a	3a	3a	3b	3b
	ZL MZCL MCL SCL	3b	3b	3b	3b	3b
	HZCL HCL	3b	3b	3b	4	4
	SC ZC C	3b	3b	3b	4	5
V	S LS SL SZL	4	4	4	4	4
	ZL MZCL MCL SCL	4	4	4	4	4
	HZCL HCL	4	4	4	4	4
	SC ZC C	4	4	4	5	5
Soils in Wetness Class VI - Grade 5						

Notes for Figure 2: 1) For naturally calcareous soils with more than 1% calcium carbonate (CaCO₃) and between 18% and 50% clay in the top 25cm, the grade, where different from that of other soils, is shown in brackets; and 2) Sand is not eligible for Grades 1, 2 or 3a; 3. Loamy sand is not eligible for Grade 1.

¹⁷ Ministry of Agriculture, Fisheries and Food, (1988), *Agricultural Land Classification of England and Wales – Revised guidelines and criteria for grading the quality of agricultural land*.

Figure 3: Methodology for calculating the severity of a droughtiness limitation to ALC grading¹⁹

$$AP \text{ wheat (mm)} = \frac{TA_{vt} \times LT_t + \sum (TA_{vs} \times LT_{50}) + \sum (EA_{vs} \times LT_{50-120})}{10}$$

where

TA_{vt} is Total available water (TA_v) for the topsoil texture

TA_{vs} is Total available water (TA_v) for each subsoil layer

EA_{vs} is Easily available water (EA_v) for each subsoil layer

LT_t is thickness (cm) of topsoil layer

LT_{50} is thickness (cm) of each subsoil layer to 50 cm depth

LT_{50-120} is thickness (cm) of each subsoil layer between 50 and 120 cm depth

Σ means 'sum of'.

$$AP \text{ potatoes (mm)} = \frac{TA_{vt} \times LT_t + \sum (TA_{vs} \times LT_{70})}{10}$$

where

LT_{70} is thickness (cm) of each subsoil layer to 70 cm depth

MB (Wheat) = AP (Wheat) - MD (Wheat)

MB (Potatoes) = AP (Potatoes) - MD (Potatoes)

Where

MB is the Moisture Balance

AP is the Crop-adjusted available water capacity

MD is the moisture deficit, as determined by the agro-climatic assessment.

Grade according to droughtiness

Grade/ Subgrade	Moisture Balance limits (mm)		
	<i>wheat</i>		<i>potatoes</i>
1	+30	<i>and</i>	+10
2	+5	<i>and</i>	-10
3a	-20	<i>and</i>	-30
3b	-50	<i>and</i>	-55
4	<-50	<i>or</i>	<-55

3 Forestry

- 3.1.1 Assessment of forestry resources has primarily had regard to the Forestry Inventory¹⁸.
- 3.1.2 The area of land under forestry (i.e. trees and woodland) within a 4km wide study area (2km either side of the route centre line of the Proposed Scheme) has been determined using GIS, and is shown in Table 3
- 3.1.3 Substantial forestry resources adjoin the M42 to the north of its being crossed by the A452 Chester Road. The majority of these resources are contained within the Coleshill and Bannerly Pools Site of Special Scientific Interest (SSSI). Smaller areas of woodland are present in the study area including Siding Wood, associated with the alignment of the dismantled Hampton-in-Arden to Shustoke line, and the Hollywell Brook.

Table 3: Area of woodland within the study area and land required for construction

	Area of forestry land (ha)	Forestry land as a % of total land area
Forestry land in study area	316.9	10
Forestry land within land required for construction	27.9*	21

*This figure represents the total area of woodland within the land required to construct the Proposed Scheme. The removal of woodland will be kept to a reasonable minimum to facilitate the construction of the Proposed Scheme, including the retention of woodland within Coleshill and Bannerly Pools SSSI and Denbigh Spinney LWS.

- 3.1.4 The coverage of forestry land in the study area i.e. a 4km-wide corridor is 10% which is comparable with the national average for woodland coverage (10%). Forestry land is, therefore, a resource of medium sensitivity in this locality.
- 3.1.5 The extent of forestry land affected by the construction of the Proposed Scheme is some 21% of the total land requirement, which is an impact of high magnitude in terms of the assessment methodology. This is a major/moderate adverse effect which is significant.

¹⁸ National Forest Inventory Woodland and Ancient Woodland

4 Assessment of effects on holdings

- 4.1.1 The effects on farm holdings have been assessed according to the methodology set out in the Addendum to the Scope and Methodology Report (Volume 5: Appendix CT-001-000/2). The necessary data has been collected through contact and/or interviews with affected farmers and other rural land interest along the route. Where this has not been possible, the data has been estimated.
- 4.1.2 The nature of impacts considered comprises the temporary or permanent land requirements from the holding, the temporary and permanent severance of land, the permanent loss of key farm infrastructure and the imposition of disruptive effects (particularly noise and dust) on land uses and the holding's operations. These impacts occur primarily during the construction phase of the Proposed Scheme and are set out in Table 4.

Table 4: Summary of assessment of effect on farm holdings

Holding reference, name and description	Construction effects	Residual effects
CFA 23/16 Home Farm, Hampton-in-Arden 324ha arable and livestock Medium sensitivity to change	<p>Land required 2.9ha - 0.9% of holding. Negligible impact.</p> <p>Land required for construction of route (cutting) and the formation of a balancing pond adjacent to A452 Chester Road and Stonebridge Island. Small areas required for temporary topsoil storage, haul road and works compound Negligible impact.</p> <p>Severance: Single field unit affected; no new severance. Negligible impact.</p> <p>Infrastructure: No infrastructure effects. Negligible impact.</p> <p>Disruptive effects: Closure of Diddington Lane will sever connection between the affected land from the main farm centre, requiring use of less convenient and longer alternative route. Low to medium impact.</p> <p>Overall temporary assessment: Holding also affected by the Proposed Scheme in Balsall Common and Hampton-in-Arden area (CFA23) where the majority of land and the main farm centre are located. The overall assessment of effects is undertaken in the Balsall Common and Hampton-in-Arden (CFA23) report.</p>	<p>Land required 0.4ha - 0.1% of holding. Negligible impact.</p> <p>Severance: Single field unit affected; no new severance. Negligible impact.</p> <p>Infrastructure: No infrastructure effects. Negligible impact.</p> <p>Disruptive effects: Permanent closure of Diddington Lane will sever connection between the affected land from the main farm centre, requiring use of less convenient and longer alternative route. Low to medium impact.</p> <p>Overall temporary assessment: Holding also affected by the Proposed Scheme in CFA23 where majority of land and main farm centre are located. The overall assessment of effects undertaken in the Balsall Common and Hampton-in-Arden (CFA23) report.</p>
CFA24/1 Home Farm, Packington	<p>Land required: 8.6ha; 1.8% of holding. Negligible impact.</p> <p>Land required for the realignment of</p>	<p>Land required: 4.2; 0.9% of holding. Negligible impact.</p> <p>Severance: Field access off A452 Chester</p>

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Holding reference, name and description	Construction effects	Residual effects
485 ha arable and livestock Medium sensitivity to change	<p>A452 Chester Road and the formation of balancing ponds to east side of A452 Chester Road. Small areas required for temporary topsoil storage and works compound adjacent to A452 Chester Road and Stonebridge Island.</p> <p>Severance: Loss of field accesses off A452 Chester Road to adjoining field units. Low impact.</p> <p>Disruption: Inconvenience arising from loss of field accesses, but unlikely to affect land use. Low impact.</p> <p>Overall temporary assessment: Minor effect -not significant</p>	<p>Road reinstated through joint use of balancing pond accesses. No new severance. Negligible impact.</p> <p>Infrastructure: No infrastructure effects. Negligible impact.</p> <p>Overall permanent assessment: Negligible impact - not significant.</p>
CFA24/2 Park Farm 324 ha arable Medium sensitivity to change	<p>Land required: 74.3ha; 22.9% of holding. High impact.</p> <p>Land required for construction of proposed route, Interchange station, car parking, flood storage and ecological and landscape mitigation along the Hollywell Brook and south-east of Packington Lane Land required for temporary topsoil storage, haul roads and works compounds associated with the construction of the route and the Interchange.</p> <p>Severance: No severance effects are created as all the holding's land bounded by A45 Coventry Road, A452 Chester Road and Middle Bickenhill Lane is within the potential construction area. Negligible impact.</p> <p>Disruption: The scale of temporary land requirements will be a source of disruption to the farm enterprise, particularly given its proximity to the farm centre, and is likely to result in changes to the enterprise. Medium impact.</p> <p>Overall temporary assessment: Moderate impact - significant</p>	<p>Land required: 49.3ha; 15.2% of holding. Medium impact.</p> <p>Severance: No new severance effects. Access to reinstated land re-established or alternative provision made. Negligible impact.</p> <p>Infrastructure: No infrastructure effects. Negligible impact.</p> <p>Disruption: The scale of permanent land requirements and their proximity to the farm centre will be a source of disruption to the farm enterprise, and likely to result in changes to the enterprise. Medium impact.</p> <p>Overall permanent assessment: Moderate impact - significant</p>
CFA24/3 Land west of Middle Bickenhill Lane Size unknown* Livestock Medium sensitivity to change	<p>Land required: 39.2ha; 78% of holding. High impact.</p> <p>Land required for construction of Birmingham Interchange car parking, people mover and ecological and landscape mitigation. Land required for concrete batching plant, materials storage, haul roads workers' accommodation and topsoil storage.</p>	<p>Land required: 16.3ha; 33% of holding. High impact.</p> <p>Severance: Severance effects, with two principal residual areas of land. Provision is made for access to reinstated land from routes to Scheme facilities. Low impact.</p> <p>Infrastructure: No infrastructure effects.</p>

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Holding reference, name and description	Construction effects	Residual effects
	<p>High magnitude effects</p> <p>Severance: No severance effects. All the land within the holding bounded by M42 and Middle Bickenhill Lane within the potential construction area. Negligible impact.</p> <p>Disruption: The scale of land requirements may be a source of disruption to the farm enterprise, and result in changes to the enterprise. Low-Medium impact.</p> <p>Overall temporary assessment: Major/moderate impact -significant.</p>	<p>Disruption: The scale of permanent land requirements may be a source of disruption to the farm enterprise, and result in changes to the enterprise. Low-Medium impact</p> <p>Overall permanent assessment: Major/moderate impact -significant.</p>
<p>CFA24/4</p> <p>Common Farm , part Wheeley Moor Farm (CFA19/1)</p> <p>150ha Arable and livestock</p> <p>Medium sensitivity to change</p>	<p>Land required: 29.2ha; 19.5% of holding. Medium impact.</p> <p>Land required for the construction of the proposed route, a new A452 Chester Road/A446 Stonebridge Road roundabout and associated highway works. Land required temporarily for concrete batching plant, haul roads, topsoil storage and works compounds.</p> <p>Severance: No severance effects. All land within the holding bounded by M42 and the A452 Chester Road is within the potential construction area. Negligible impact.</p> <p>Disruption: Isolation of farm buildings. The scale of construction land requirements will be a source of disruption to the farm enterprise, particularly given its proximity to the subsidiary farm centre at Common Farm, and is likely to result in changes to the enterprise. Medium impact.</p> <p>Overall temporary assessment: Holding also affected by the Proposed Scheme in Coleshil Junction (CFA19), where majority of land and main farm centre are located. The overall assessment of effects is undertaken in the Coleshill Junction (CFA19) report.</p>	<p>Land required: 12.8ha; 8.5% of holding. Low impact</p> <p>Severance: Two main units of residual land created to which provision is made from the public highway. Medium magnitude effect.</p> <p>Infrastructure: Isolation of buildings from land</p> <p>Disruption: Access to residual land will require protracted use of public highway network by agricultural vehicles and equipment, which may influence the future use of the land. Medium impact.</p> <p>Overall permanent assessment: Moderate impact -significant.</p>
<p>CFA24/5</p> <p>Bogs Farm West</p> <p>Size unknown* Arable</p> <p>Medium sensitivity to change</p>	<p>Land required: 5.7ha; 11% of holding. Medium impact</p> <p>Land required for formation of balancing pond and provision of ecological mitigation works. Land also required in connection with alterations to A446 Stonebridge Road and related</p>	<p>Land required: 5.4ha; 11% of holding. Medium impact</p> <p>Severance: No new severance effects. Access to land affected by balancing pond reinstated. Negligible impact.</p> <p>Infrastructure: No infrastructure effects Negligible impact.</p>

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Holding reference, name and description	Construction effects	Residual effects
	<p>slip road.</p> <p>Severance: No severance effects. Negligible impact</p> <p>Disruption: Possible temporary interference with use of field accesses off the A446 Stonebridge Road. Low magnitude effect</p> <p>Overall temporary assessment: Moderate impact- significant</p>	<p>Overall permanent assessment: Moderate impact- significant</p>
<p>CFA24/6</p> <p>Hawkeswell Farm</p> <p>175ha+ Arable and livestock</p> <p>Medium sensitivity to change</p>	<p>Land required: 24.5ha; 14% of holding. Medium impact.</p> <p>Land required for construction of proposed route and associated ecological and landscape mitigation works and temporarily required for access and topsoil storage.</p> <p>Land required in Coleshill Junction (CFA19) for construction of balancing pond, including temporary require for construction compound</p> <p>Severance: Severance effects and loss of field access onto Coleshill Heath Road. Medium impact.</p> <p>Disruption: No disruptive effects. Negligible impact.</p> <p>Overall temporary assessment: Moderate impact- significant</p>	<p>Land required: 7.6ha; 4% of holding. Negligible impact.</p> <p>Severance: No residual severance. Replacement field access off Coleshill Heath Road addresses severed land to east of the Proposed Scheme. Severed land to west of Proposed Scheme continues to be accessed from existing access onto A452 Chester Road. Negligible impact.</p> <p>Infrastructure: No infrastructure effects. Negligible impact.</p> <p>Overall permanent assessment: Negligible - not significant</p>

Note: *The size of these holdings is unknown and a factor of 50ha has been applied for the purposes of the assessment.

5 References

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